Command and Control Human-to-Machine Interface

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The official link for this solicitation is:
http://www.acq.osd.mil/osbp/sbir/solicitations/sbir20152/index.shtml

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Description:
Command and control human-to-machine interface is critical to overall missile defense system performance due to human decisions and interactions associated with command and control systems. Recent advances in virtual reality, stereo-graphics, touch screen interfaces, and automated decision aides have the potential to revolutionize how Warfighters interact with command and control systems by providing situational awareness capabilities that immerse Warfighters in the battlespace environment and present relevant information for quick decisions. Innovations developed under this topic should be in graphical displays or techniques to effectively transmit critical information quickly and effectively to achieve an understanding of the underlying patterns, interrelationships of the data, and particularly critical aspects. Optimal visual representations of missile defense data form the basis for inferences and decisions. However, a poorly chosen graphical form can lead to erroneous inferences and potentially degrade performance. Important components will be the time varying nature of the data, as well as varying priorities across space and time and various accesses, i.e. different users will have different authority and visibility on the system. The graphical display system could be operated when the BMDS Warfighter is subject to considerable stress, so the system needs to be designed to accommodate such use. In addition, the system needs to be flexible and adaptable for new types of information. The underlying battle management framework exists to interoperate with the necessary tactical data link, mapping, and analysis engines. Therefore, the intent of this effort is not to create “yet another missile defense situational awareness display”, but to design and develop an original, innovative, and effective approach to human-to-machine interaction. The proposer should assume that, for the tactical situation display,

data fusion and correlation algorithms are not part of this effort. PHASE I: Develop and demonstrate an original, innovative situational awareness and engagement management human-to-machine interface concept. Research and provide evidence as to how this approach improves situation recognition and reaction times through proof-of-principle tests utilizing simple battlespace management situations provided to the operator. Demonstrate how this technology can be used to enhance both C2BMC training and operational processes. PHASE II: Refine and update concept(s) based on Phase I results and demonstrate the technology in a realistic environment using government provided operations scenarios. The deliverable would be a working prototype that demonstrates a missile defense situational awareness and engagement management environment that enables an individual to interact with the situation and make decisions quickly. Demonstrate the technology’s ability in a stressed raid environment with multiple input data sources and user types. PHASE III: Demonstrate the new technologies via operation as part of the complete missile defense battle management system or operation in a system-level test bed to allow for testing and evaluation in realistic scenarios. A successful prototype could be transitioned into a battle management training and/or operational system. Market technologies developed under this solicitation to relevant missile defense elements directly, or transition them through vendors. Commercialization: The contractor will pursue commercialization of the various technologies and optimization components developed in Phase II for potential commercial and military uses in many areas such as 911 centers, battlefield displays, integrated air and missile defense, or trauma triage displays.